Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of Modernizing the E-rate Program for Schools and Libraries

WC Docket No. 13-184

COMMENTS OF QUALCOMM INCORPORATED

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SUMMARY

Despite the resounding chorus of comments from educators, content providers, mobile technology developers, service providers, and even the FCC itself in the summer of 2010 advocating modernization of the E-rate program to cover full mobile broadband connectivity and devices, the latest Notice of Proposed Rulemaking is unfortunately silent on the benefits of allowing schools to use E-rate funds to provide underprivileged students with the same type of mobile devices and 3G/4G mobile broadband connectivity that more fortunate students are using to access educational content and learn from their teachers and classmates at any time and any place, before and after school, wherever they happen to be. Instead, the Notice focuses solely on providing fiber connections and local Wi-Fi hotspots in schools and libraries, as if 21st century digital learning only takes place in and around those locations. We all know that is not the case.

While broadband access in and around schools and libraries is no doubt important, today's students, no matter their income level, must have mobile broadband tools at home, on the school bus, and elsewhere off of school grounds, to perform research, collaborate with classmates and teachers, watch instructional videos, and complete assignments. Low-income students who cannot afford anywhere/anytime broadband access, and thus are the focus of the E-rate program, are at a severe disadvantage, and the E-rate program should be used to fill that void. Without federal support, a new digital divide will emerge — a mobile divide.

Just last week, Acting FCC Chairwoman Mignon Clyburn explained: "The rest of the American public benefits from mobile engagement, staying connected no matter their location, so why should low-income consumers be any different?"[1] As Chairman Genachowski exclaimed

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[1]   Prepared Remarks of Acting FCC Chairwoman Mignon Clyburn, New America Foundation Communications Safety Net: How Lifeline Connects Families and Communities (Sept. 12, 2013) at 5.

more than three years ago: "If schools want to support learning on the mobile tools of tomorrow, E-Rate should support them."[2] And, as Commissioner Rosenworcel noted in her comments supporting the instant E-rate NPRM: "Access to adequate broadband is not a luxury, it is a necessity for our next generation to be able to compete."[3] Qualcomm could not agree more.

Schools all over the country are moving quickly to support learning on mobile devices including tablets, e-readers, and smartphones. The only question is whether underprivileged students will be left out, and the answer must be "no." To that end, schools should be permitted to use E-rate funds to enable a mobile broadband education toolkit that includes mobile devices and mobile broadband connectivity. Allowing E-rate funds to be used in this manner would give underprivileged students cost-effective anywhere/anytime access to high-quality instructional materials, customized curricula, and online collaboration tools that other students are using to improve their performance. This is not speculation. The tangible benefits to students from school programs using mobile devices and off campus mobile broadband connectivity have been demonstrated in the Qualcomm Wireless Reach-sponsored Project K-Nect and in the many pilot programs funded by the Commission's Learning-On-the-Go Program.

Indeed, supporting student-to-student communications outside of school via mobile broadband is an important part of the learning experience. A key factor in the improved student performance observed in the multi-year Project K-Nect effort with four high schools in North Carolina was the ability to support after-hours networking among students using smartphones to help them solve homework problems instead of giving up until the next school day.

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[2]   Prepared Remarks of FCC Chairman Genachowski, National Rural Education Technology Summit (July 21, 2010) at 3.

[3]   *See* Statement of Commissioner Jessica Rosenworcel at 2, Re: Modernizing the E-rate Program for Schools and Libraries, WC Docket No. 13-184.

Using E-rate funds to provide full mobile broadband connectivity will enable new ways of teaching and learning and ensure the long-term success of America's workforce. Mobile technology improvements, including the wide scale deployment of 3G and 4G mobile broadband networks, and cost reductions in mobile broadband-enabled tablets, laptops, smartphones, and e-readers are allowing digital textbooks to substantially replace the paper versions. Indeed, today's successful learner holds a library of information in the palm of her or his hand, and the E-rate program should fully support such digital learning. Thus, any approach to E-rate that does not support mobile devices and 24/7 connectivity would be obsolete before enactment.

Hence, the E-rate program should list as eligible items ubiquitous mobile broadband connectivity and associated mobile devices, *e.g.*, smartphones, tablets, e-readers and laptops. The FCC also should move beyond the current priority one / priority two classification system and place all eligible items on a consolidated menu so schools can pick those items that best suit their local needs, as Commissioner Pai recommends.[4]

In sum, the proliferation of mobile learning tools is transforming our educational system for the better. Qualcomm applauds the FCC's commitment to modernize the universal service programs to support ubiquitous mobile broadband connectivity, but the agency should allow schools to leverage 3G/4G networks to support mobile tools via the E-rate program, so all students can have access to broadband at night and on the weekends, when they are completing school assignments, absorbing online lectures, performing research, and collaborating with classmates.[5] To do otherwise is to ignore the reality of the growing role of mobile in education

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[4]   *See* Statement of Commissioner Ajit Pai at 1-2, Re: Modernizing the E-rate Program for Schools and Libraries, WC Docket No. 13-184.

[5]   *See* Statement of Acting FCC Chairwoman Mignon Clyburn, at 2, Re: Modernizing the E-Rate Program for Schools and Libraries, WC Docket No. 13-184 ("We must ensure that our young people, teachers and the millions of citizens that use libraries each year have access to the

and risk leaving the students who are the very target of E-rate support standing at the edge of a

new digital divide.

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tools they need to compete and succeed in the digital age.").

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Modernizing the E-rate   WC Docket No. 13-184
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COMMENTS OF QUALCOMM INCORPORATED

Qualcomm Incorporated ("Qualcomm") offers these comments in response to the Federal

Communications Commission's ("FCC's") latest Notice of Proposed Rulemaking proposing to

modernize the E-rate Program.[6] As explained herein, Qualcomm strongly encourages the FCC to

broaden the scope of the instant NPRM along the lines that this agency itself proposed more than

three years ago — which are unfortunately overlooked in the latest NPRM. The FCC should

enact the specific proposals in the 2010 E-rate NPRM and the National Broadband Plan to

provide E-rate funding for 3G and 4G mobile broadband connectivity and also fund devices so

that underprivileged students can keep pace with all other students who are using mobile

broadband tools after school and on weekends to complete assignments, access libraries of

information, and collaborate with classmates from the comfort of their homes, on the long bus

ride to and from school, and countless other locations off of school grounds.[7]

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[6]   *See Modernizing the E-rate Program for Schools and Libraries*, WC Docket No. 13-184,
Notice of Proposed Rulemaking, FCC 13-100, 28 FCC Rcd 11304 (2013) (hereinafter
"NPRM").

[7]   *See Schools and Libraries Universal Service Support Mechanism*, CC Docket No. 02-6,
and *A National Broadband Plan For Our Future*, GN Docket No. 09-51, Notice of Proposed
Rulemaking, FCC 10-83, 25 FCC Rcd 6872 (2010) (hereinafter "2010 E-rate NPRM"); FCC
Connecting America: The National Broadband Plan (rel. Mar. 16, 2010) at 239,

INTRODUCTION & BACKGROUND

In their comments on the 2010 E-rate NPRM, educators, educational content providers, broadband service providers, and technology developers (including Qualcomm) implored the FCC to promptly authorize E-rate funding for mobile broadband services and mobile learning devices, such as tablets, e-readers, smartphones and laptops that come integrated with mobile service.[8] These comments, as well as the NPRM itself, detail the extraordinary successes and innovative teaching approaches exemplified by the numerous projects and demonstrate how mobile broadband technology is revolutionizing education.[9] Indeed, teachers and students around the country are successfully embracing anywhere/anytime 3G and 4G mobile broadband connectivity.[10] Educators are using online portals and messaging tools to deliver assignment reminders to students, and students and teachers are using mobile devices to collaborate on

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Recommendation 11.23.

[8]   *See, e.g.,* Comments of AT&T at 9; Comments of Cisco Systems, Inc. at 5-6; Comments of Clearwire Corp. at 3-4; Comments of CTIA - The Wireless Association at 14-19; Comments of eChalk, Inc. at 3-4; Comments Of Miami-Dade County Public Schools at 6; Comments of Motorola Inc. at 2; Comments of the New York State Office of Children and Family Services at 2;. Comments of Information Technology Centers of the Ohio E-Rate Consortium at 15-16; Comments of the Public Broadcasting Service at 2-4; Comments of Qualcomm Incorporated; Comments of Sprint Nextel Corporation at 2-5; *and see* Comments of Sunesys, LLC at 7 (each filed July 9, 2010, in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51); *and see* Reply Comments of Blackboard, Inc. at 2-3; Reply Comments of CTIA - The Wireless Association at 6-12; Reply Comments of Nevesem, Inc.; Reply Comments of San Diego Unified School District (each filed July 26, 2010, in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51). *See also* 2010 E-rate NPRM at ¶ 46.

[9]   *See* 2010 E-rate NPRM at ¶47; Comments of Qualcomm on 2010 E-rate NPRM at 8-14.

[10]   In June 2013, 4G Americas reported that there were 192.5 million HSPA and LTE mobile broadband subscriptions in North America, representing 52 percent of the more than 373 million total mobile subscriptions in the region at the end of 2Q2013. *See* Yahoo! Finance, "1H2013: HSPA and LTE Now 52% of Mobile Connections in U.S. and Canada and 21% in Latin America LTE Penetration Rate at 18.3% in North America; 1.8% Worldwide," *available at* http://finance.yahoo.com/news/1h2013-hspa-lte-now-52-173616000.html (*last accessed* Sept. 16, 2013) ("The North American market remains in the leadership position of LTE market share worldwide with 51 percent of the world's 126 million connections at the end of June 2013.").

projects, plan class schedules, record podcasts, access lectures and teaching tools from leading educators, and facilitate collaborative learning.

In 2010, the FCC established the Learning On-The-Go ("LOGO") wireless pilot program to further study the merits of enabling innovation in learning outside the boundaries of school buildings and the traditional school day.[11] Nearly one hundred entities applied for LOGO funds, and the Commission chose to fund 20 pilot programs. According to a summary of the interim reports filed last year, the LOGO pilot programs provided significant positive results, including "evidence of students' improving achievement, staying in school instead of dropping out, feeling more confident in mathematics, taking ownership for their learning, and showing an increased interest in college."[12] The wireless pilot programs also found "greater communication with parents who speak a foreign language, and improved professional development opportunities for community members to improve their technology skills and seek employment."[13]

In comments just filed in this docket, the San Diego County of Education explains that a school that participated in the FCC's LOGO pilot program experienced a <u>43 point increase</u> in its Academic Performance Index score, which was the highest gain of any middle school in the San Diego Unified School District.[14] Students who participated in the pilot program reported to be

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[11]   *See E-rate Deployed Ubiquitously 2011 Pilot Program*, Order, WC Docket No. 10-222, DA 11-1181 (July 11, 2011).

[12]   "In a recent survey, a majority of parents felt that reading and math skills development were benefits of their children's use of mobile devices and applications." National Survey on Mobile Technology for K-12 Education, Research Report, Educator Edition 2013, Interactive Educational Systems Design, Inc. and STEM Market Impact, LLC, at 1 ("National Survey"). National Survey reports also that most school districts would implement one-to-one mobile technology if they could afford it. *Id*. at 3.

[13]   *See* "Summary of Interim Reports Submitted by EDU 2011 Pilot Program Schools and Libraries" in WC Docket No. 10-222, (filed by San Diego County Office of Education on Apr. 20, 2012).

[14]   San Diego County Board of Education Comments at 7, in WC Docket No. 13-184 (filed

"more motivated by the digital environment and enjoy[ed] making presentations and demonstrating projects" and teachers indicated that their students "achieved higher levels of quality." Other LOGO schools reported exceptional gains in algebra with the greatest increase in the number of students moving into "Proficient" and "Advanced" on state exams than other 7th graders across the district.[15]

Despite these powerful results, the latest NPRM does not address any of the successes of the LOGO wireless pilot programs and does not propose to provide any E-rate funding support for either off-campus 3G and 4G mobile broadband connectivity or the mobile devices needed to take advantage of such connectivity. The FCC should remedy this glaring omission. At a minimum, the Commission should allow schools to choose to use E-rate funding for off-campus mobile broadband connectivity.

Providing such mobile broadband connectivity and portable learning tools such as tablets and e-readers via the E-rate program will help disadvantaged students overcome the lack of technology resources and support at home, which often leads to their falling behind in core school subjects. Qualcomm and its mobile communications industry partners are at the forefront of helping educators improve their teaching and students their learning via robust mobile broadband connectivity, devices, and educational software applications. Consistent with the recommendations of the National Broadband Plan, the proposals in the 2010 E-rate NPRM, and the successes demonstrated by the LOGO wireless pilot programs, the FCC should promptly authorize use of E-rate funding to enable schools to take advantage of the expanding options offered by ubiquitous mobile broadband connectivity.

Sept. 13, 2013).

[15]   *See id.*

DISCUSSION

I.   In Comments Filed More Than Three Years Ago On The 2010 E-rate NPRM, Many Entities Implored The FCC To Authorize Full Funding Of Mobile Broadband Connectivity For Educational Purposes Off Of School Premises And After School Hours

Many parties who filed comments on the 2010 E-rate NPRM strongly supported the FCC's proposal to authorize E-rate funding to provide students with anytime/anywhere access to mobile broadband connectivity.[16] They echoed Qualcomm's conviction — which is even stronger today — that 21st century education programs require students to have anywhere/anytime access to information outside of the classroom. There is no question that today's successful student has in the palm of her hand at all times a mobile learning device that allows her to pull up assignments, communicate with classmates and with teachers, where needed, to complete assignments, learn more about subjects of interest, and work on additional homework problems if necessary to fully understand a new subject.

Indeed, it is surprising that the FCC does not propose to authorize E-rate funding mobile broadband connectivity particularly when the NPRM acknowledges that "schools and libraries increasingly are purchasing mobile connectivity"[17] and recognizes "the potential value to students … of having access to broadband services off premises."[18]

Back in 2010, AT&T explained that providing E-rate support for off-campus wireless broadband Internet access can instantaneously lessen the "digital divide" between students that have broadband Internet access at home and those that do not.[19] As then FCC Chairman

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[16]   *See* n.8, *supra*; *see also* 2010 E-rate NPRM at ¶ 46.

[17]   NPRM at ¶ 63.

[18]   NPRM at ¶ 321.

[19]   *See* Comments of AT&T at 9 (filed July 9, 2010 in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51).

Genachowski explained, "Education does not stop at the schoolyard gate, and so support of broadband for education shouldn't stop there either."[20] And, as Acting Chairwoman Clyburn explained just last week in the context of the Lifeline program: "The rest of the American public benefits from mobile engagement, staying connected no matter their location, so why should low-income consumers be any different?"[21]

Full funding of off-campus 3G and 4G mobile broadband connectivity is needed as soon as possible to equip all American students with "the digital skills required to participate in our 21st century economy and society."[22] Without it, we are at risk of creating a "mobile divide."

Today, millions of students use mobile technology to continue their learning outside of school. Anywhere/anytime mobile broadband connectivity funded through the E-rate program would help students to overcome falling behind in core subjects like English, Math, Science, and Social Studies due to a lack of technology resources and parental support at home.[23] Such connectivity also would allow students who are absent from school due to illness or other complicating factors to remain active participants in school and communicate in real-time with teachers and schoolmates. It also would enable students to continue their learning on the bus to and from school, which is especially important for students in rural areas who travel many miles

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[20] Prepared Remarks of FCC Chairman Julius Genachowski, "Connect a School, Connect a Community," ITU World Telecommunications Development Conference, Hyderabad, India (May 25, 2010) (also noting the benefits of e-textbooks, broadband Internet access, and the need to expand our collective focus "from schools and classrooms to students and teachers").

[21] Prepared Remarks of Acting FCC Chairwoman Mignon Clyburn, New America Foundation Communications Safety Net: How Lifeline Connects Families and Communities (Sept. 12, 2013) at 5.

[22] *Id*.

[23] *See FCC National Broadband Plan* at 239, Recommendation 11.23 ("students without off-campus access to online educational services will be increasingly left behind in terms of skills, experience and confidence in their online capabilities").

to school.[24] Moreover, educators will reap benefits, for as wireless education technologies allow

learning to expand beyond the four walls of the classroom and the hours of the school day,

teachers will gain flexibility in how they use precious classroom minutes.

For example, Qualcomm Wireless Reach teamed up with School In The Park ("SITP"),

the San Diego Museum of Art, the San Diego Zoo, and the San Diego History Museum to

develop unique educational Augmented Reality ("AR") experiences using mobile broadband-

enabled devices.[25] AR technology overlays digital educational material onto physical

environments, and SITP used Qualcomm's Vuforia technology on MoGo's FreshAiR platform to

design customized AR enhanced teaching tools to engage students in using valuable 21st century

mobile skills. The AR experiences implemented here are helping enrich curricula related to

plants, animals, ecosystems, and food chains, as well as map reading and geography in the San

Diego area, and the cultural practices of the indigenous Native American Kumeyaay people.

Thus, Qualcomm deeply believes that the FCC should support 24/7 online learning via

the E-rate program by eliminating the rule that requires schools to allocate the cost of wireless

Internet access service between E-rate eligible in-school use and non-eligible uses away from

school premises. "Making wireless Internet access and wireless telecommunications services

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[24]   *See, e.g.,* Comments of Conterra Ultra Broadband, LLC at 6 (filed July 9, 2010 in
response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51) (noting that
Navajo students face one hour plus bus rides to and from school, and far away from any
possibility of traditional Internet access). Indeed, many students in suburban and rural areas of
the country spend hours traveling on the school bus each week. Moreover, it is incongruous to
allow E-rate support for the bus driver's cell phone as an "educational purpose", while not
supporting students' use of mobile devices to start on homework or work on projects. *See*
NPRM at ¶ 321, n.449.

[25]   Wireless Reach is Qualcomm's corporate program that brings wireless technology to
underserved communities around the globe. *See* "Qualcomm Wireless Reach Case Study:
United States, Augmented Reality Experience," *available at*
http://www.qualcomm.com/media/documents/wireless-reach-case-study-united-states-
augmented-reality-experience-english (*last accessed* Sept. 16, 2013).

eligible for full E-rate support, regardless of physical location, also simplifies applicants' eligible use compliance activities and is thus fully consistent with the goal of streamlining the E-rate program," for it relieves them of having to account for the usage that occurs off of school grounds.[26] In short, such action by the agency would make available to needy schools and students the innovative educational approaches and tools detailed by many commenters.[27]

II.   Schools And Libraries Should Be Allowed To Use Mobile Broadband Connectivity

The NPRM focuses exclusively on deploying fiber to schools and libraries coupled with local Wi-Fi hotspots, and overlooks the advanced capabilities, substantial capacity, and reliability offered by today's mobile broadband networks. Since 2010, when the FCC first proposed to fund mobile broadband connectivity off of school grounds via the E-rate program, wireless carriers have tremendously upgraded their networks, rapidly blanketing the nation with LTE connectivity.[28] This is another key point that is completely absent from the NPRM.

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[26]   *See* Comments of CloudED Mobility at 3 (filed July 9, 2010 in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51).

[27]   *See* n.16, *supra*.

[28]   *See, e.g.,* AT&T 4G LTE Reaches 400 Markets, Nearly 240M POPs *available at* http://about.att.com/newsroom/att_4g_lte_reaches_400_markets_nearly_240m_pops.html (last accessed Sept. 16, 2013); Sprint Turns on More 4G LTE Markets, Expands LTE Coverage, 185 total LTE markets across the country; 34 more LTE markets launched in September *available at* http://newsroom.sprint.com/news-releases/sprint-turns-on-more-4g-lte-markets-expands-lte-coverage.htm (last accessed Sept. 16, 2013). T-Mobile's 4G LTE network now reaches 180 million people in 154 metro areas, and the company is "on target to have nationwide 4G LTE network coverage by the end of 2013, reaching 200 million people." *See* T-Mobile 4G LTE Network Fact Sheet *available at* http://newsroom.t-mobile.com/phoenix.zhtml?c=251624&p=irol-faq *(last accessed* Sept. 16, 2013). The Verizon Wireless 4G LTE network is available in more than 500 markets across the United States. *See* Verizon Wireless News Center *available at* http://news.verizonwireless.com/LTE/Markets.html (last accessed Sept. 16, 2016).

Moreover and not surprisingly, in many rural and underserved areas of the country, wireless connectivity is the most cost effective means of providing broadband access.[29] Mobile broadband networks deploying 4G LTE Advanced technology can aggregate multiple carriers to greatly increase data rates.[30] Such aggregation, when combined with multiple-input and multiple-output ("MIMO") tools, can provide data rates that will be more than sufficient to provide hundreds of high-definition video streams to a rural school or library.[31]

Furthermore, providing E-rate support for mobile connectivity both on and off of the campus of a school or library will further encourage mobile network providers to expand their coverage and capacity in these regions of the country. Schools and libraries should be given the flexibility to purchase the lowest cost broadband solution, and wireless broadband networks offer a viable and economic solution — especially where it is used to provide access to both students and teachers on and off of school grounds on a 24/7 basis.

Qualcomm disagrees with the FCC's broad claim that cellular data plans are "costly" and that Internet access can be provided more efficiently on campus via a local area network.[32]

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[29]   *See* NPRM at ¶ 67 (seeking comment on the most efficient technological architectures to serve schools and libraries).

[30]   *See* Qualcomm website, "LTE Advanced - Leading in chipsets and evolution," *available at* http://www.qualcomm.com/solutions/wireless-networks/technologies/lte-advanced (*last accessed* Sept 16, 2013) (further explaining that aggregation of two 10 MHz carriers was launched in June 2013 powered by Qualcomm Technologies' Snapdragon 800 smartphone chipsets integrated with its third generation Gobi LTE solution; dual carrier aggregation enables peak data rates of 150 Mbps (Cat 4) and can double the network capacity for bursty applications).

[31]   *See* NPRM at ¶¶ 25-26 (seeking comment on whether 1 Gbps broadband connectivity is appropriate for libraries and schools in remote areas of the country).

[32]   NPRM at ¶ 102. *See also id*. at ¶ 146 (describing cellular data connections as "expensive").

Mobile broadband data connections are continuing to decrease in price and a number of mobile

broadband providers offer reasonably-priced unlimited data plans.

III.   The Commission Should Recast The Eligible Services List As "The Eligible Services & Portable Educational Devices List" And Include Mobile Devices And Applications

To properly modernize the E-rate program to support 21st century digital learning, the

Commission should provide E-rate funding not only for fiber connections to schools and libraries

(and local Wi-Fi hotspots within those sites), but it must also fund mobile broadband

connectivity and portable learning devices and applications.[33] In this regard, Qualcomm

reiterates its request that the FCC recast the Eligible Services List as the "Eligible Services &

Portable Educational Devices List."[34]

Failure to authorize such support will limit the utility of and access to the benefits of

mobile broadband services for educational purposes for disadvantaged students. As the National

Broadband Plan recommended, E-rate support for wireless data services to mobile devices for

educators "should be harmonized with support for student devices during any rulemaking."[35]

Indeed, Cisco recently reported outstanding results through the use of mobile broadband enabled

devices by one of the participants in the FCC's LOGO wireless pilot program.[36] The Katy

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[33]   *See, e.g.,* Comments of Clearwire at 5 (filed July 9, 2010 in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51) ("equipment related to the provision of Wireless Internet service, such as personal computer cards, connection cards or similar devices, should be eligible for E-rate support").

[34]   *See* Comments and Reply Comments of Qualcomm (filed July 9, 2010 and July 26, 2010, in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51).

[35]   *See FCC National Broadband Plan* at 244, n.122; *and see* Prepared Remarks of FCC Chairman Genachowski, National Rural Education Technology Summit (July 21, 2010) at 3.

[36]   *See* Cisco White Paper, High-Speed Broadband in Every Classroom: The Promise of a Modernized E-Rate Program (Sept. 2013) at 12-13 ("There wasn't one teacher who didn't see improvements in engagement and test scores" and reporting testimonials from teachers who said, "I've been teaching for 20 years, and I've never seen anything like this;" the "creativity these tools allowed was just amazing." The mobile devices enabled differentiated learning by

Independent School District in Texas distributed Android smartphones to 1,500 fifth-graders in 10 schools, and teachers and administrators "witnessed surging levels of engagement and achievement among students who had access to the technology tools;" for instance, test performance increased from the 70th to 90th percentile on math exams.

Mobile devices are desirable because they are portable and can easily travel with the student. In fact, more than one-third of U.S. teenagers own a smartphone and 23 percent use a tablet.[37] Amplify, a developer of a next-generation tablet designed for K-12 education, has observed that the "tablet becomes the[students'] digital backpack, filled with all of the content, assignments and activities of their classes, as well as tools to individualize their learning and explore their interests."[38] Not surprisingly, a laptop with Internet access tops the list of items on the New York Times' Digital Back-to-School Checklist given that "much homework these days requires children to do research on the Internet, even in elementary school."[39] In middle school, smartphones are becoming a staple.[40]

A number of other commenting parties have explained that the Commission must provide E-rate support for mobile learning devices in order to truly realize the goal of providing wireless broadband access.[41] Moreover, authorizing subsidization of the cost of wireless broadband

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allowing students to use pencil and paper or podcasts.).

[37] *See* Laura Devaney, "How Classrooms Are Adopting Mobile Tech, New survey maps one-to-one deployments, digital textbooks, future plans," ESCHOOL NEWS at 12 (Sept. 2013) ("Parents have reported that they believe their students' reading and math skills improved while using mobile devices and related applications.").

[38] National Survey, *supra*, n.12.

[39] Warren Buckleitner, "Tool Kit – A Digital Back-to-School Checklist," NEW YORK TIMES (Aug. 28, 2013) (noting also that each sixth grader in a St. Joseph Michigan school district is being issued a MacBook Air that will follow the student into high school).

[40] *See id.*

[41] *See, e.g.,* Comments of CloudED Mobility at 5; Comments of the Ohio E-Rate

access without subsidizing the school's acquisition of the portable learning device itself may be a

hollow gesture in many instances. In fact, E-rate covers certain wired equipment but not its

wireless counterpart. For example, there is no functional difference between a wired modem,

which is eligible for E-rate support, and a portable wireless modem, which may not be, except

that the wireless modem can be used wherever the student is physically located. Both types of

devices should be covered without restriction by the E-rate program.

> As the Ohio E-rate Consortium explained three years ago:

> > Adding portable learning devices to the Eligible Services List would not
> > unduly impact other services. Adding these devices would not increase
> > the broadband capacity schools need and thus would not increase the cost
> > of services to the schools. In addition to having no financial impact on the
> > E-rate program, these devices would prove invaluable to students in
> > completing their homework assignments or preparing extra-curricular
> > school projects.[42]

Students in low-income areas can use these devices to gain access to textbooks, educational

publications, and libraries of information at lower costs. There is no better use of E-rate funds

than to support e-readers and next-generation digital textbooks for use on the devices. Such

funding directly facilitates continued learning outside the classroom.

> Furthermore, eSchool News reports that most barriers to enabling schools to adopt

mobile technology are financial, with most school districts reporting that they would purchase

tablets if they could afford them because of their ability to support personalized learning and

cater to different learning styles.[43] E-rate can and should meet that need.

Consortium at 15-16 (both filed July 9, 2010 in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51).

[42] Comments of the Ohio E-Rate Consortium at 16 (filed July 9, 2010 in response to the 2010 E-rate NPRM in CC Docket No. 02-6 & GN Docket No. 09-51).

[43] *See* Devaney n.37, *supra*. *See also* National Survey, *supra*, n.12.

In sum, the E-rate program – which focused traditionally on wiring schools and has in many cases successfully achieved that goal – should be broadened to cover mobile broadband services, devices, and applications, since students will benefit greatly from portable learning tools that allow them to learn anywhere and anytime.

IV.   The FCC Should Place All Eligible Items On A Consolidated Menu So Schools Can Easily Choose Those Items That Best Meet Their Needs

The FCC should simplify "The Eligible Services & Portable Educational Devices List" and E-rate support application process by allowing E-rate applicants to have an equal chance of receiving support for any eligible items, such as full mobile broadband connectivity and smartphones, regardless of the regulatory classification. In other words, the agency should do away with the existing priority one / priority two classification system. As Commissioner Pai recommends, the Commission should place all eligible items on a consolidated menu and allow schools to pick those items that best meet their local needs.[44]

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[44]   *See* Statement of Commissioner Ajit Pai at 1-2, Re: Modernizing the E-rate Program for Schools and Libraries, WC Docket No. 13-184.*See* NPRM at ¶¶ 248-51.

CONCLUSION

Qualcomm respectfully requests that the FCC promptly promulgate rules to revise the E-rate program so that it supports full access to mobile broadband connectivity and places portable learning devices into the hands of students so that they can be used both on and off of school grounds. The Commission should also offer E-rate applicants a consolidated menu of items from which to choose covered services and devices, along the lines proposed by Commissioner Pai. These simple changes will enable American teachers and students and the Commission to truly transform the E-rate program into the "student-centered" program that it should be.

Respectfully submitted,

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